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which would contain one car under active traffic conditions. A small automobile, rated at 23 horsepower, was used. The power was employed in part to turn large paddle wheels which mixed the air in the chamber. Practically uniform concentrations of exhaust gas were found simultaneously in all parts of the chamber. It was found that the engine discharged a total of approximately 25 cubic feet of exhaust gas per minute; and samples of the exhaust gas unmixed with air gave from 5.5 to 6.8 per cent of carbon monoxide, an average of about 6 per cent, from which it appeared that approximately 1.5 cubic feet of carbon monoxide were produced by the car per minute.

If, then, a car while "warming up" should give off 1 cubic foot of carbon monoxide per minute in a closed room 10 by 10 by 20 feet, the atmosphere would reach the dangerous concentration of 15 parts in 10,000 in three minutes.

REPORT OF A HUMAN PLAGUE CASE IN SAN BENITO COUNTY, CALIF.

By W. T. HARRISON, Passed Assistant Surgeon, United States Public Health Service.

The patient in the case here reported (R. S.) was a white school-boy eight years of age, residing in the Bitterwater Valley, San Benito County, Calif. He became sick on the afternoon of June 8, 1921, and came home from school with fever, headache, malaise, and vomiting. There were severe pain and swelling in the right axillary region. He was taken to Hollister on June 10, at 2.30 p. m., and was seen by Dr. O'Bannon, who made a provisional diagnosis of plague.

On June 11, at 5 a. m., his temperature was 104.5° F. There were swelling and induration of entire right shoulder, great tenderness, mild delirium, and great prostration. On the lower border of the right scapula were two spots slightly inflamed which appeared to be insect bites. One drop of serum was withdrawn from edematous shoulder and inoculated on agar slants. At 1 p. m. on June 11, 90 c. c. of Pasteur plague serum was administered, 10 c. c. intravenously and 80 c. c. subcutaneously; on June 12, at 2 a. m., 60 c. c., subcutaneously; at 8 a. m., 40 c. c.; and on June 13, at 8 p. m., 40 c. c.

On the morning of June 15 the temperature was normal and the induration of the shoulder was rapidly subsiding.

On June 17 there was a severe serum rash, which continued for three days, with an elevation of temperature to 104° F. The temperature subsided June 20, and the induration of the shoulder disappeared.

Cultures from the serum withdrawn on June 11 were entirely negative. On June 14, after considerable induration had disappeared, additional cultures were made from an enlarged lymphatic gland, which

by this time could be distinctly felt. After 48 hours' growth, these tubes were inoculated intraperitoneally into two guinea pigs. Both pigs were dead within 48 hours. The peritoneum was intensely injected and covered with a sticky exudate. Bipolar organisms were present in enormous numbers. Plate cultures from this exudate yielded an organism showing the following characteristics: Minute colorless colonies on agar in 24 hours, becoming slightly grayish in 48 to 72 hours; very slight turbidity in broth; no stalactites were observed; involutinal forms on 2.5 per cent salt agar; very slightly on acid in glucose broth.

Inoculation of additional guinea pigs by vaccination and pocket yielded typical gross lesions of plague from which the organism was recovered in pure culture.

SUMMARY.

This case of human plague originated in an old squirrel plague-focus in the Bitterwater Valley, San Benito County. The patient was seen and large doses of serum were administered 68 hours after onset, which probably explains the fairly rapid recovery. Credit for the fortunate outcome is due Dr. O'Bannon, of Hollister, for his prompt diagnosis, and Fred I. Lackenbach, of San Francisco, for keeping in stock a potent plague serum for which there is very little demand.

PROMPT MOSQUITO CONTROL BY USE OF THE TOP MINNOW, *GAMBUSIA*.

Ichthyologist Samuel F. Hildebrand recently made the following report on the prompt control of mosquito production by employment of *Gambusia* in large numbers:

Unusually heavy rains were experienced around Augusta, Georgia, early in July. As a result, many temporary ponds were formed. A pond, covering about one-fourth acre of ground, was observed on July 18 to contain mosquito larvæ in countless numbers. Culicine larvæ predominated, but many anopheline larvæ were also found. The mosquito larvæ were uniformly distributed over the pond. Previous to the July rains this depression was completely dry, but it gave evidence of having been under water for a considerable period of time since aquatic plants, cat-tails, and arrow-heads were well established. Smart-weed, Bermuda grass, and foxtail occurred along the edges of the water. On July 19, approximately 2,000 *Gambusia* were introduced. On the evening of July 20 no wiggletails were visible in open water, but they were exceedingly numerous in the vegetation where they had gone for protection. On and after July 26 only an occasional small wiggletail could be found.